(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
19 April 2001 (19.04.2001)

PCT

(10) International Publication Number
WO 01/26469 A1

(51) International Patent Classification[7]: A01N 57/20

(21) International Application Number: PCT/AU00/00283

(22) International Filing Date: 4 April 2000 (04.04.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PQ3393 13 October 1999 (13.10.1999) AU
PQ4059 15 November 1999 (15.11.1999) AU

(71) Applicant *(for all designated States except US)*: **NU-FARM LIMITED** [AU/AU]; 103-105 Pipe Road, Laverton North, Victoria 3026 (AU).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **KOENIG, Shane, John** [AU/AU]; 135 Lavery Drive, Casuarina, Western Australia 6167 (AU). **MUIR, Clifford, Neale** [NZ/AU]; Lot 16 Allen Road, Forrestdale, Western Australia 6112 (AU).

(74) Agent: **PHILLIPS ORMONDE & FITZPATRICK**; 367 Collins Street, Melbourne, Victoria 3000 (AU).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 01/26469 A1

(54) Title: HERBICIDAL COMPOSITION AND ADJUVANT

(57) Abstract: A herbicidal glyphosate composition including the monoisopropylamine salt of glyphosate and the ammonium salt of glyphosate.

Herbicidal Composition and Adjuvant

The present invention relates to a herbicidal composition and in particular a composition containing the herbicide glyphosate.

N-phosphonomethylglycine, known by its common name glyphosate, is a well known broad spectrum herbicide which is widely used in domestic and broadacre weed control. Glyphosate is a water insoluble acid and is therefore formulated as a water soluble salt, generally the isopropylamine salt.

Glyphosate is sold and used in a range of formulation types. The manufacturers of glyphosate generally prepare it for transport and shipping as an aqueous concentrate from which commercial products can readily be prepared by dilution and in some cases the addition of additives.

Glyphosate may be formulated for sale as an aqueous concentrate which is diluted by the end user prior to application. Concentrates may be packaged with surfactants and may be used with adjuvants which are mixed with the herbicide in a spray tank before use. Glyphosate is also sold to domestic markets as a dilute solution packaged with a spray applicator ready for direct application to weeds. Water soluble granules or powders are also available which contain a glyphosate salt and generally also a surfactant. These dry formulations are dissolved in water by the end user before application.

Despite the versatility of glyphosate it tends to be less stable in solution particularly concentrated solutions at low temperature and the high viscosity of concentrated solutions makes them difficult to pump and handle. There is a need for a glyphosate composition which is stable and easy to handle in a wide range of formulations.

Glyphosate products are frequently sprayed in conjunction with other pesticides. Although this can greatly reduce the cost of application incompatibility between glyphosate and the second pesticide can be an issue.

We have now found that by mixing the isopropylamine salt of glyphosate with the ammonium salt of glyphosate, particularly in certain ratios, compositions are stable at a wide range of concentrations. For example, the viscosity of aqueous solutions is reduced allowing the composition to be more easily dispensed or allowing the concentration to be significantly increased while remaining stable. This finding was surprising as the ammonium salt of glyphosate is much less soluble than the isopropylamine salt. The compositions of the invention also generally exhibit good compatibility with other pesticides.

In accordance with the invention we provide a glyphosate composition including the monoisopropylamine salt of glyphosate and the ammonium salt of glyphosate. The ratio of said monoisopropylamine salt to said ammonium salt is typically in the range of from 80:20 to 97:3 based on the weight of glyphosate in the acid form. In this ratio of salt the composition is surprisingly versatile allowing extremely high concentrations to be handled more easily and with enhanced stability.

In a particularly preferred embodiment of the invention the weight ratio of said monoisopropylamine salt to said ammonium salt is in the range of 85:15 to 95:5 based on the weight of glyphosate in the acid form.

The glyphosate composition of the invention may use glyphosate at a wide range of concentrations. For example the composition may have a high concentration of 600g/L, based on the weight of glyphosate in the acid form, or more such as may be used for transport and shipping, it may be a concentrate of the type to be diluted prior to use or it may be a dilute composition prepared from the concentrate or of the type sold in spray packs for domestic use.

It is desirable to sell and transport glyphosate as a high concentration aqueous solution however the useful concentration of conventional compositions is limited by viscosity of the formulation and its solution stability. Conventional glyphosate compositions become increasingly viscous in aqueous solution at concentrations

above 300g/L (based on the acid form) and particularly from about 360g/L with the result that at high concentrations they cannot as readily be dispensed by the end user. The pumps used by farmers to dispense herbicides do not readily allow delivery of compositions containing over 490g/L glyphosate. At high concentrations glyphosate is also less stable in solution, particularly at low temperatures.

The glyphosate concentrate compositions of the invention will typically include at least 300g/L of glyphosate. The compositions of the invention are particularly advantageous when they include at least 360g/L glyphosate based on acid form and preferably they include at least 450g/L. Even more preferably the concentration is at least 490g/L and most preferably the glyphosate concentration is at least 500g/L. We have found that concentration of up to 540g/L or more may be formed with a viscosity allowing easy dispensing by the container pump systems used by farmers. Further the composition is generally stable even at low temperatures for example at 5°C.

Manufacturing concentrates may be prepared with concentrations of as high as 620g/L or more. Although concentrated compositions of at least 360g/L glyphosate are preferred the composition of the invention may be in the form of a diluted composition if desired. The concentration will preferably be at least 3.6g/L For example it may be in the form of a dilute formulation prepared from a concentrate before application or it may be a dilute solution of the type packaged for the domestic market.

The composition of the invention may and typically will contain other additives. For example the composition may include a surfactant component. The surfactant component may include one or more surfactants and is preferably present in an amount of up to 20% by weight of the total composition. In cases where the surfactant is present at the upper end of this range the glyphosate concentration will be relatively low. More preferably the surfactant is present in an amount of up to 5% by weight of the total composition. At such surfactant concentrations higher amounts of glyphosate may be used to provide at least 500g/L glyphosate.

Examples of surfactants which may be useful include alkanolamides, betaine derivatives, ethoxylated propoxylated block copolymers, glycerol esters, glycol esters, imidazolines and imidazoline derivatives, lanolin derivatives, lecithin derivatives, tertiary or quaternary polyoxyalkylene alkylamines, polyoxyalkylene and non-polyoxyalkylene alkylamine oxides, polyoxyalkylene alkylethers, polyoxyalkylene alkylarylethers, polyoxyalkylene alkylesters, alkoxylated and non-alkoxylated sorbitan esters, alkyl glycosides, alkyl polyglycosides, sucrose esters, sucrose glycerides, alkyl sulphates or phosphates, olefin sulfonates, alkylaryl sulfonates, polyoxyalkylene alkylether sulphates or phosphates, sulfosuccinate derivatives, sulfosuccinamates, taurates, sulphates and sulfonates of oils, fatty acids, alcohols, alkoxylated alcohols, fatty esters and aromatic derivatives and mixtures thereof.

We have found the properties of the composition are particularly useful when the surfactant includes a phosphate ester, particularly an ethoxylated alcohol phosphate ester which may be in the form of a salt such as the ammonium or alkylamine salt such as the monoisopropylamine salt. It is particularly preferred that the surfactant includes the ammonium salt of the ethoxylated alcohol phosphate ester.

It is often desirable to use other herbicides in combination with glyphosate. In some cases these other herbicides can be mixed with the glyphosate composition and additives shortly before application. Dinitroanilines are one of the most commercially successful classes of herbicides. In particular, trifluralin is widely used in pre-sowing application to soil in many important crops. It is effective against both grassy weeds and broad-leave weeds. Herbicides of the triazine family, particularly atrazine, are also used at the time of sowing crops, particularly canola.

In order to kill the maximum number of weeds the timing for application of glyphosate needs to be left until shortly before sowing. This also coincides with the optimal timing for dinitroanilines and triazines. If glyphosate and

dinitroanilines or triazines could be effectively applied together this has the potential to allow better knockdown. It would also allow farmers to sow a crop at the optimal time to maximise yield and reduce competition from weeds. Tank mixing of the herbicides would reduce the labour and cost associated with separate applications which are currently required.

Existing formulations of glyphosate are generally incompatible with dinitroanilines and triazines. For example mixture with trifluralin or atrazine can result in phase separation when the herbicides are combined. Also their combined use has been found to seriously reduce the efficacy of the compositions.

We have found that the compositions of the invention exhibit improved compatibility. In particular when the ammonium salt of an ethoxylated alcohol phosphate ester is used as the surfactant in the compositions of the invention the formulation is compatible with dinitroanilines or triazines and mixtures of these herbicides with glyphosate do not generally suffer loss of efficacy to the same extent as conventional formulations. Indeed there is a significant improvement in efficacy when compared with combinations of the presently available herbicide compositions at corresponding concentrations.

Accordingly in a preferred embodiment of the invention we provide a glyphosate formulation including the monoisopropylamine salt of glyphosate and the ammonium salt of glyphosate wherein the ratio of said monoisopropylamine salt and ammonium salt is in the range from 80:20 to 97:3 (preferably 85:15 to 95:5) and therein the formulation includes a surfactant including the ammonium salt of an ethoxylated alcohol phosphate ester. The ethoxylated alcohol phosphate ester is preferably present in an amount of up to 5% by weight of the composition and most preferably from 0.5 to 5% by weight of the total composition.

The composition of the invention may be used as a stand alone product by diluting it with water to the required glyphosate concentration. It is desirable in many circumstances to use the herbicide composition in combination with an adjuvant. When the herbicide composition is to be used with other herbicides or

with hard diluting water (over 1000 ppm) then use of an adjuvant is particularly preferred. Suitable adjuvants for use with glyphosate are known in the industry and they may be used if desired.

Suitable adjuvants include equivalently acceptable inorganic salts, dispersants, wetters and antifoam agents. Examples of acceptable inorganic salts include ammonium sulphate, ammonium nitrate, potassium phosphate, tetrapotassium pyrophosphate, sodium bisulphate, sodium sulphate, ammonium bicarbonate. Ammonium sulphate is particularly preferred.

Examples of dispersants and wetters include the surfactants referred to above, however preferred dispersants include long aliphatic quaternary ammonium compounds, aliphatic amines, alkylpolysaccharides and ethoxylated phosphates. Ethoxylated fatty amine surfactants such as soya amine ethoxylate and tallow amine ethoxylate, alkylpolysaccharides and ethoxylated alcohol phosphate ester or mixtures, of two or more thereof, or with the above examples of surfactants are particularly useful.

The adjuvant may if desired contain crop oils such as paraffinic oils, vegetable oils or vegetable oil derivatives.

We have found that certain types of adjuvant components in combination provide compatibility with other herbicides such as triazine and dinitroanilines and a level of activity which is not readily obtained with existing adjuvants.

Accordingly in a further aspect the invention provides an adjuvant composition for use with glyphosate herbicide compositions the adjuvant including:

ammonium sulphate, an alkylammonium sulphate or mixture thereof;

a surfactant component including an ammonium salt of an ethoxylated alcohol phosphate ester and

an amphoteric surfactant.

The alkylammonium sulphate when present may be a mono-, di- or trialkyl-ammonium sulphate. The alkyl group or groups preferably contain up to six carbon atoms, more preferably up to 4 carbon atoms and most preferably are isopropyl. Ammonium sulphate is preferably present.

The amphoteric surfactant is preferably a phospholipid with an acidic buffer, particularly propionic acid .

The preferred concentration of components in the adjuvant are as follows:

from 5 to 30% w/w of ammonium sulphate alkylammonium sulphate or mixture thereof;

from 0 to 25% w/w, preferably from 0.5 to 25% w/w of ammonium salt of an ethoxylated alcohol phosphate ester and;

from 0.5 to 10% w/w of amphoteric surfactant which is preferably a phospholipid.

The adjuvant of the invention may be used with the glyphosate composition of the invention or it may be used with other glyphosate compositions such as those which are commercially available from numerous sources. The adjuvant composition of the invention will generally be mixed with a glyphosate composition shortly before use. The composition will normally be mixed in the spray tank however it is preferred that at least a portion of the adjuvant to be used is added to the spray tank prior to the glyphosate. Preferably all of the adjuvant component to be used will be added to the spray tank prior to addition of the glyphosate composition.

The present invention will now be more fully described with reference to the following examples. It should be understood, however, that the description following is illustrative only and should not be taken in any way as a restriction on the generality of the invention described above. Where the concentration of glyphosate is expressed in grams per litre (g/L) it is understood that this refers to grams of glyphosate as the acid form per litre of composition.

Example 1

A glyphosate composition in accordance with the invention was prepared by combining the following components in the relative quantities specified:

RAW MATERIAL	Quantity KG/L
*Glyphosate Acid (Wetcake)	0.6287
2-Propanamine 100% w/w	0.1864
Ammonia (28% w/w)	0.0213
GERONOL CF/AR	0.0266
LUCONYL Green FK872	0.001
Process Water	0.3710
Specific Gravity	1.2350

*The glyphosate acid wetcake contained approximately 86% w/w glyphosate based on glyphosate acid (11% w/w water). The purity of the glyphosate was 96.5% on a dry basis.

The composition, which contains 540g/L glyphosate could readily be delivered using standard pumps used by farmers and was stable in solution at temperatures of 5°C for extended periods.

GERONOL CF/AR surfactant sold by Rhodia is the 2-propanamine salt of ethoxylated alcohol phosphate ester.

Example 2

An adjuvant formulation for use with a glyphosate composition was prepared by combining the following components in the relative quantities specified:

RAW MATERIAL	QUANTITY KG/L
Ammonium Sulphate	0.2550
RHODOFAC ARB-70	0.1786
Ammonia (28%w/w)	0.0510
Li-700	0.0455
Process Water	0.6320
Specific Gravity	1.162

RHODOFAC ARB-70 sold by Rhodia is an ethoxylated alcohol phosphate ester and forms the ammonium salt in solution.

Li-700 from Loveland Industries Inc, U.S.A. is a mixture of soyal phospholipids and propionic acid.

The combination of components in the adjuvant composition generally allows for better physical compatibility and improved efficacy even in hard water.

Example 3

The performance of the composition according to the present invention comprising the glyphosate composition of Example 1 and the adjuvant formulation of Example 2, was compared with a leading commercial glyphosate formulation containing 490g/L glyphosate (based on glyphosate acid) in the form of the isopropylamine salt (Comparative example).

The results are shown in the attached drawings.

Referring to the drawings:

Figure 1 is a graph comparing the viscosity of the glyphosate formulation of the invention with a leading 490g/L glyphosate formulation.

Figure 2 is a bar chart comparing the low use rate efficiency of a 1:1 mixture (by volume) of the composition/adjuvant formulation of Example

1/Example 2 with the comparative glyphosate/adjuvant combination (Comparative example) - in the recommended mixing ratio - at the rate of grams of active ingredient per hectare.

Figure 3 is a bar chart comparing the weed control performance of the composition of the Example 1 when used with the adjuvant of Example 2 in a 1:1 volume ratio with the composition of Comparative example when used with the recommended surfactant adjuvant.

Figure 4 is a bar chart comparing the efficiency obtained by the crop performance of the glyphosate/adjuvant combination of Examples 1 and 2 (1:1 volumetric ratio) with the composition of Comparative example when used together with TRIFLUR trifluralin formulation.

Figure 5 is a bar chart comparing the performance of the glyphosate/adjuvant combination of Examples 1 and Example 2 (1:1 volumetric ratio) with the composition of the Comparative example, when each are used with NUTRAZINE brand atrazine formulation.

Referring to Figure 1 it can be seen that the viscosity of the composition of the invention is significantly less than the prior art formulation despite containing 540g/L compared with the prior art containing 490g/L. The dual salt composition of the invention gives a viscosity which is typically 30% less than the prior art high loading compositions which merely contain 490g/L glyphosate acid

Referring to Figure 2 it can be seen that despite lower use rates placing more pressure on the surfactant system the composition/adjuvant combination of the invention performs successfully even at low rates. We found higher efficacy thus prior art formulations of 490g/L glyphosate at equivalent low usage rates (gai/ha= grams active ingredient per hectare). As shown in Figure 3 we also found good activity on broadleaf weeds such as cape weed or clover at equivalent rates. This is a weakness of many prior art formulations.

Glyphosate products are frequently sprayed in conjunction with other pesticides but incompatibility with other pesticides is sometimes an important issue which can arise from physical effects within the spray tank or biological effects. Biological incompatibility (antagonism) may result from interactions between herbicides resulting in poorer weed control than when the herbicides are separately applied. Figures 4 and 5 show that the glyphosate composition of the invention exhibits a high compatibility rate when compared with a high rate glyphosate composition. Figure 4 compares the invention with the prior art composition when each are used with a commercial Trifluralin composition. Figure 5 compares composition of the invention with the prior art composition when used with commercial atrazine formulation.

It is to be understood that the invention described hereinabove is susceptible to variations, modifications and/or additions other than those specifically described and that the invention includes all such variations, modifications and/or additions which fall within the spirit and scope of the above description.

Claims:

1. A herbicidal glyphosate composition including the monoisopropylamine salt of glyphosate and the ammonium salt of glyphosate.

2. A herbicidal composition according to claim 1 in the form of an aqueous solution.

3. A herbicidal composition according to claim 1 wherein the ratio of said monoisopropylamine salt to said ammonium salt is in the range of from 80:20 to 97:3 based on the weight of glyphosate acid in each form.

4. A herbicidal composition according to claim 2 wherein the weight ratio is in the range of from 85:15 to 95:5 based on glyphosate acid.

5. A herbicidal composition according to claim 3 wherein the concentration of glyphosate in the isopropylamine and ammonium salt form is at least 360 g/L based on glyphosate acid.

6. A herbicidal composition according to claim 5 wherein the concentration is at least 450 g/L glyphosate.

7. A herbicidal composition according to claim 5 wherein the concentration is at least 490 g/L.

8. A herbicidal composition according to claim 5 wherein the concentration is at least 500 g/L.

9. A herbicidal composition according to claim 5 wherein the concentration is no more than 620 g/L glyphosate.

10. A herbicidal composition according to claim 1 further including a surfactant in an amount of up to 20% by weight of the total composition.

11. A herbicidal composition according to claim 10 wherein the surfactant includes a phosphate ester.

12. A herbicidal composition according to claim 10 wherein the surfactant includes an ethoxylated alcohol phosphate ester.

13. A herbicidal composition according to claim 12 wherein the surfactant includes an ethoxylated alcohol phosphate ester in the form of a salt selected from the ammonium and alkylamine salt in an amount of from 0.5 to 5% by weight of the total composition.

14. A herbicidal composition according to claim 2 wherein the composition further includes a herbicide selected from triazines and dinitroanilines.

15. A herbicidal composition according to claim 1 in the form of a dilute composition for application to crops, the composition including an aqueous solution of at least 3.6 g/L of glyphosate in the form of said monoisopropylamine salt and said ammonium salt; ammonium sulphate selected from ammonium sulphate alkylammonium sulphate and mixtures thereof; a surfactant component including an ammonium salt of an ethoxylated alcohol phosphate ester; and an amphoteric surfactant.

16. A herbicidal composition according to claim 15 wherein the amphoteric surfactant is a phospholipid with an acidic buffer.

17. A method of forming a glyphosate composition for application to weeds including applying to the herbicidal composition of claim 5 with water to provide a solution containing at least 3.5 g/L of glyphosate based on the glyphosate acid and mixing the composition with an adjuvant including

from 5 to 30% by weight of a sulphate selected from ammonium sulphate, alkylammonium sulphate and mixtures thereof;

from 0 to 25% by weight of ammonium salt of an ethoxylated alcohol phosphate ester and;

from 0.5 to 10% by weight of amphoteric surfactant.

18. A method according to claim 17 wherein the amphoteric surfactant is a phospholipid and the ammonium salt of an ethoxylated alcohol phosphate ester is present in an amount of from 0.5 to 25% by weight of the adjuvant composition.

Figure 1

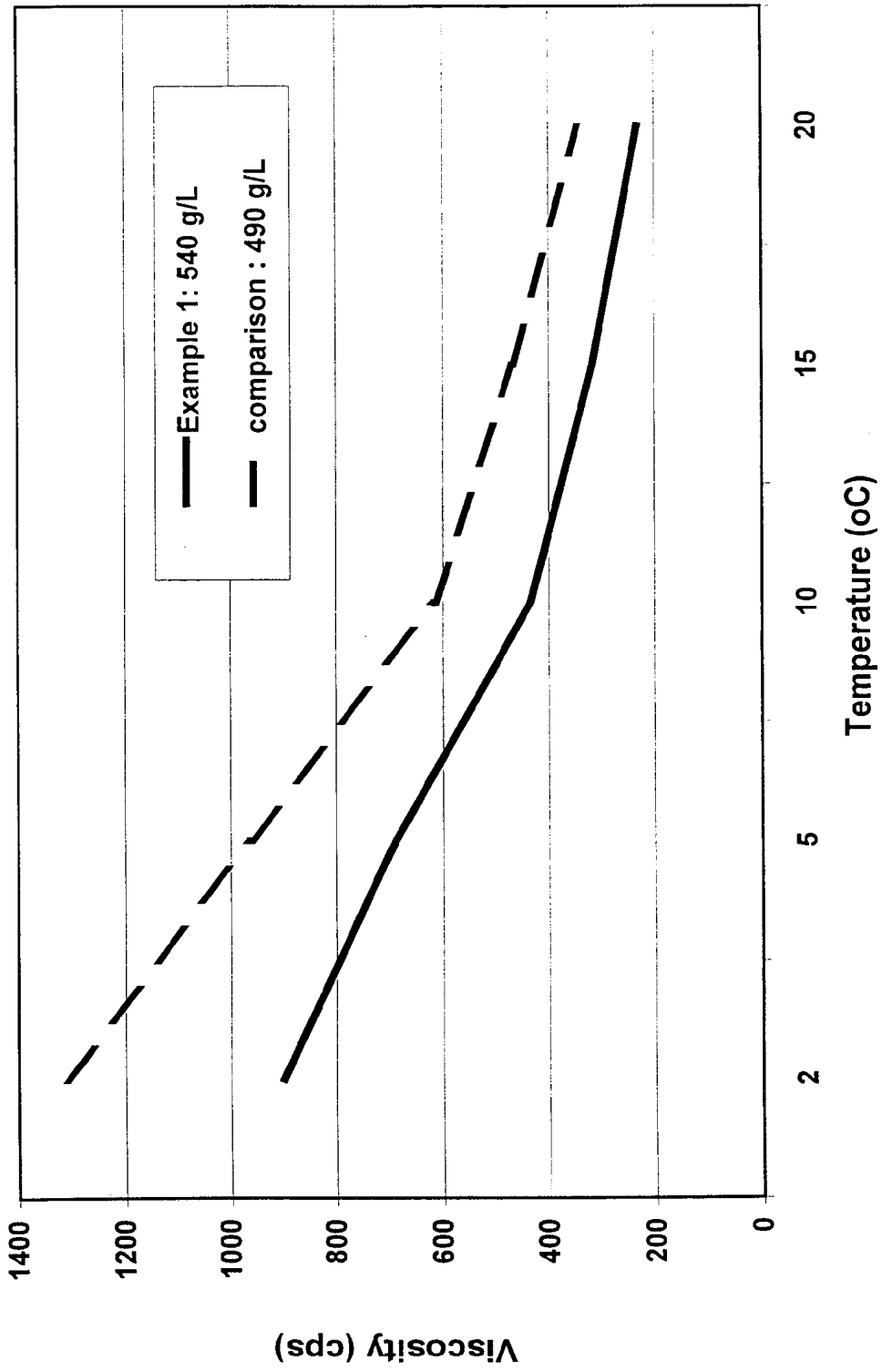

Example 1: 540 g/L
comparison : 490 g/L
Viscosity (cps)
1400
1200
1000
800
600
400
200
0
2
5
10
15
20
Temperature (oC)

Figure 2

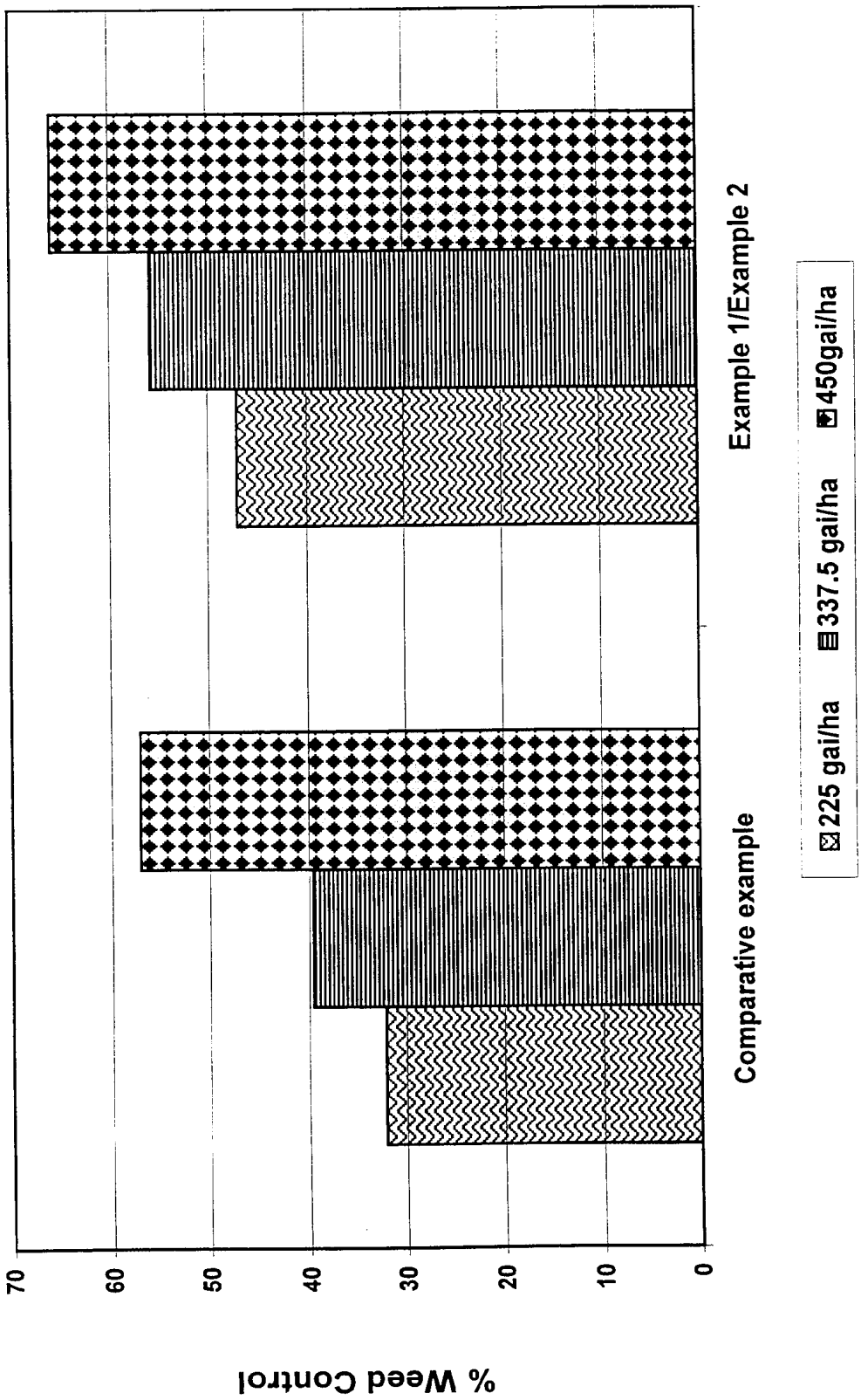

% Weed Control
70
60
50
40
30
20
10
0
Example 1/Example 2
Comparative example
225 gai/ha
337.5 gai/ha
450gai/ha

Figure 3

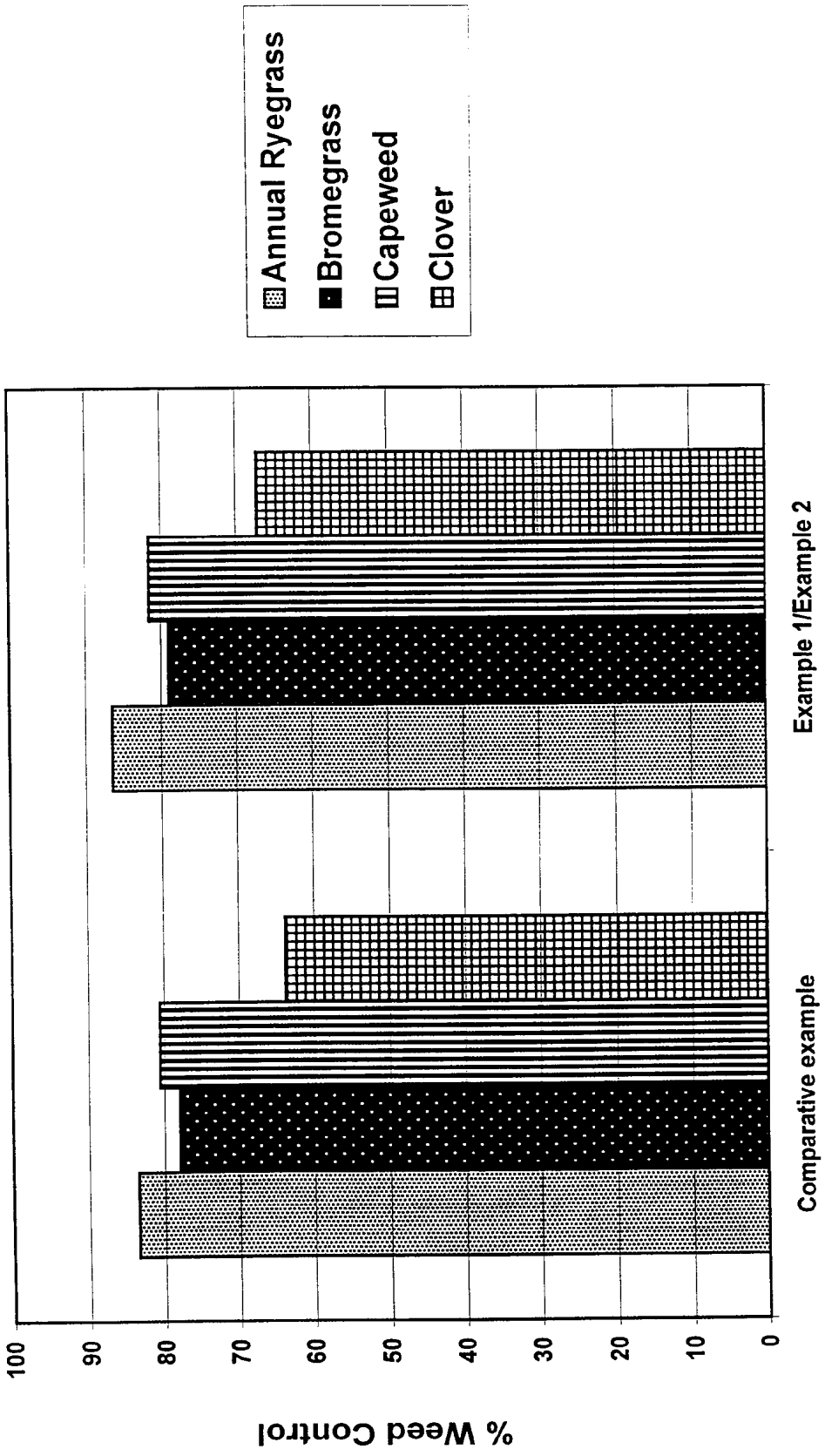

Annual Ryegrass
Bromegrass
Capeweed
Clover
% Weed Control
100
90
80
70
60
50
40
30
20
10
0
Example 1/Example 2
Comparative example

Figure 4

Weeds - Annual Ryegrass, Bromegrass, Capeweed, Clover

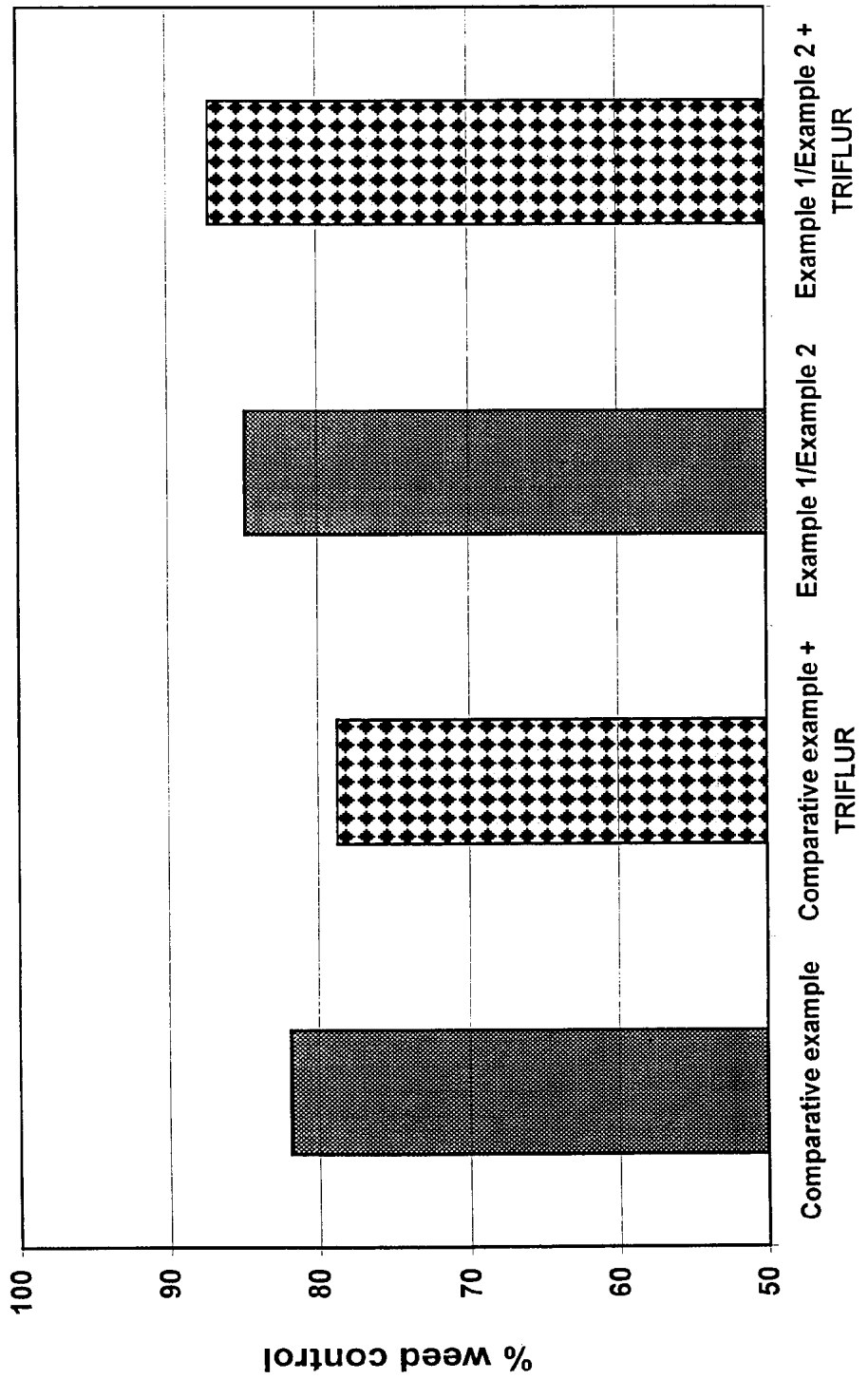
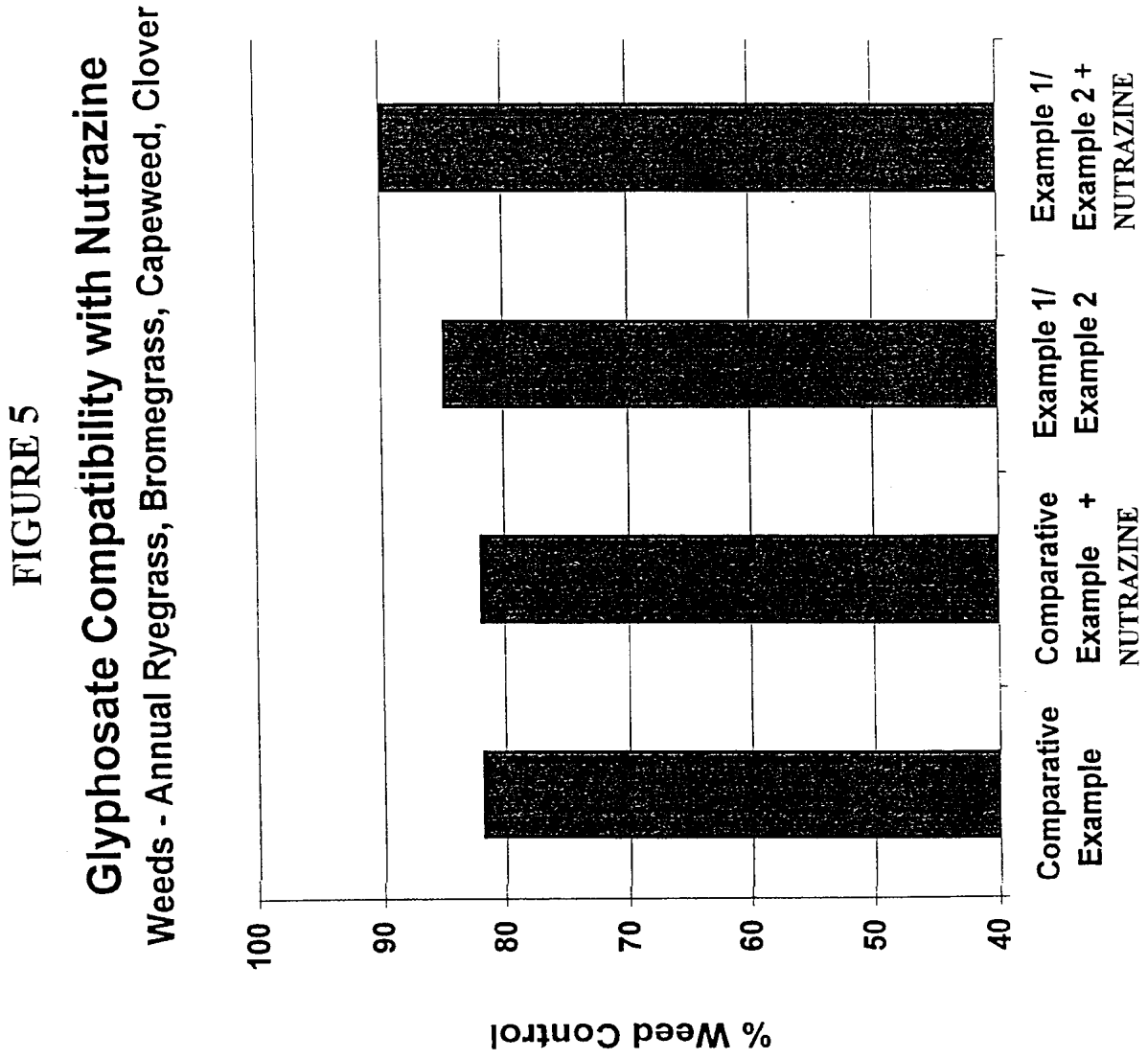


FIGURE 5


Glyphosate Compatibility with Nutrazine
Weeds - Annual Ryegrass, Bromegrass, Capeweed, Clover
% Weed Control
100
90
80
70
60
50
40
Comparative Example
Comparative Example + NUTRAZINE
Example 1/ Example 2
Example 1/ Example 2 + NUTRAZINE

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU00/00283

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: A01N 57/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC:A01N 57/20

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WPAT: A01N 57/20

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 94/02021 A (MONSANTO COMPANY) 3 February 1994 Whole document	1-18
A	WO 92/12637 A (MONSANTO COMPANY) 6 August 1992 Whole document	1-18
A	EP 0 498 145 A (MONSANTO EURPOE S.A.) 12 August 1992 Whole document	1-18

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 April 2000	- 9 MAY 2000
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer **GAYE HOROBIN** Telephone No : (02) 6283 2069

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU00/00283

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99/04635 A (MONSANTO COMPANY) 4 February 1999 Whole document	1-18

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU00/00283

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
WO	94/02021	AT	179302	AU	676482	BR	9306732
		EP	650326	MX	9304300	NZ	253632
		US	5317003				
WO	92/12637	AU	13595/92	EP	568635		
EP	498145	AU	10350/92	CA	2060104		
WO	99/04365	AU	85826/98	NO	20000292	US	5998332

END OF ANNEX